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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/648,525
Filing Date: August 26, 2000
Appellant(s): DAVIS ET AL.

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William J. Barber
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2 February 2006 appealing from the Office action mailed 17 March 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-21, 32-37, 43-47, 49-54, 56, 58-68, 71 and 72 and not claim 70 as listed in the status of the claims. Claim 70 is indicated to be allowed.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,841,918	Li	11-1998
6,445,852	Feced et al	9-2002
6,097,487	Kringlebotn et al	8-2000
6,229,827	Fernald et al	8-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 8, 9, 11, 12, 15, 32-34, 36, 43-45, 47, 58-62, 64, 66-68, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li US Patent 5,841,918 in view of Feced et al US Patent 6,445,852.

In regard to claims 1, 32, 58, 71 and 72, Li teaches (see Figures 1 and 2a-2c) a tunable optical filter or a method for selectively filtering an optical wavelength band from an input light comprising: providing a first optical element or first optical waveguide including a first reflective element (14) for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function as described in column 3, lines

45-54 and as shown in Figure 2a; and providing a second optical element or second optical waveguide, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element (16) for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function; and the first wavelength band and the second wavelength band overlap spectrally as described in column 4, lines 1-18 and as shown in Figures 2a-2c.

Regarding claims 2 and 59, Li discloses that one of the first and second optical elements or optical waveguides is tunable to change the corresponding first or second reflection wavelength and maintain substantial alignment of the first and second reflection wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18 and as shown in Figures 2a-2c.

Regarding claims 3 and 60, Li discloses that both of the first and second optical elements or optical waveguides is tunable to change each of the first and second reflection wavelengths and maintain substantial alignment of the first and second wavelengths as described in column 3, lines 58-67 and column 4, lines 1-18 and as shown in Figures 2a-2c.

Regarding claims 4 and 61, Li discloses (see Figure 1) an optical directing device (12) optically connected to the first and second optical elements or optical waveguides; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element, and directing the second wavelength band reflected from the second reflective

element to the output port of the optical directing device as shown in Figure 1 and as described in column 3, lines 41-59.

Regarding claim 5, Li discloses that the optical directing device comprises at least one circulator as described in column 3, line 16.

Regarding claim 6, Li discloses (see Figure 6) that the circulator receives the light at a first port of the circulator, directs the light to the first reflective element through a second port of the circulator, receives the first wavelength band at the second port, directs the first wavelength band to the second reflective element through a third port of the circulator, receives the second wavelength band at the third port, and directs the second wavelength band to a fourth port of the circulator as described in column5, lines 40-61.

Regarding claim 8, Li discloses that the first reflection wavelength and the second reflection wavelength are substantially aligned to reflect a portion of the aligned wavelength bands to an output port as described in column 4, lines 1-18.

Regarding claims 9, 44 and 62, Li discloses that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figure 2a, 2b.

Regarding claim 11 and 36, Li discloses that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength or wherein tuning one of the first and second reflective elements comprises offsetting a first reflection wavelength and a second reflection wavelength by a predetermined spacing as shown in Figures 2a-2c and as described in column 4, lines 1-13.

Regarding claims 12 and 45, Li discloses that at least one of the first and second optical elements have an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal section of the inner core as described in column 3, lines 16-18. Although the prior art does not specifically disclose the claimed outer cladding, inner core with the grating disposed in a longitudinal section of the inner core, this feature is seen to be an inherent teaching of that device since the waveguide or fiber Bragg grating is disclosed and it is apparent that the grating must have a core and cladding and gratings are written in a longitudinal section of cores.

Regarding claims 15, 47 and 66, Li discloses that at least one of the first and second optical elements or optical waveguides is an optical fiber as described in column 3, lines 16-18.

Regarding claim 33, Li discloses that tuning one of the first and second reflective elements includes compressing the one of the first and second optical elements as described in column 3, lines 19-24.

Regarding claim 34, Li discloses that tuning one of the first and second reflective elements comprises substantially aligning a first reflection wavelength and the second reflection wavelength as described in column 4, lines 1-18.

Regarding claim 43, Li discloses tuning the other one of the first and second reflective elements to overlap spectrally the first wavelength band and the second wavelength band as shown in Figure 2c.

Regarding claim 64, Li teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18.

Regarding claim 67, Li discloses a compression device that axially compresses at least one of the first and second tunable optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second optical waveguides as described in column 3, lines 19-40.

Regarding claim 68, Li discloses that the shape of the first reflective filter function is different than the shape of the second reflective filter function as described in column 3, lines 45-67 and as shown in Figures 2a and 2b.

However, in regard to claims 1 and 32, Li does not teach that at least one of the first reflective filter function and the second reflective filter function is not substantially flat over a substantial portion of the respective first or second reflective filter function or in regard to claim 58, that the first and second reflection wavelength are substantially the same or in regard to claim 71 that at least one of the first and second reflective filter function is not substantially constant over a substantial portion of the first and second reflective filter function or in regard to claim 72, that at least one of the first and second reflective filter function is not substantially rectangular or square in shape over a substantial portion of the first and second reflective filter function.

In regard to claims 1, 32, 58, 71 and 72, Feced et al teaches that at least one of the first reflective filter function and the second reflective filter function is not substantially flat over a substantial portion of the respective first or second reflective

filter function or are substantially the same or that at least one of the first and second reflective filter function is not substantially constant over a substantial portion of the first and second reflective filter function or that at least one of the first and second reflective filter function is not substantially rectangular or square in shape over a substantial portion of the first and second reflective filter function as described in column 11, lines 63-67 and column 12, lines 1-18.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-continuous or non-monotonic filter function as taught by Feced et al for the filter of Li in order to provide for filter characteristics that are well-matched to ideal filter responses for a wide variety of applications.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Kringlebotn et al. U.S. Patent 6,097,487.

Regarding claim 7, Li in view of Feced et al teaches the invention as set forth above but does not teach that said optical directing device comprises an optical coupler. Kringlebotn et al. teaches the optical directing device comprises an optical coupler (4) as shown in Figure 5 and as described in column 5, lines 52-67 and column 6, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize couplers as taught by Kringlebotn et al. in the optical filter of Li in view of Feced et al in order to optically direct the signals in the filter device.

4. Claims 10, 35 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claims 10, 35, and 63, Li in view of Feced et al teaches the invention as set forth above but does not teach that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized. Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li in view of Feced et al as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

5. Claims 13, 14, 16-19, 37, 46, 49, 50, 51, 53, 54, 56 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Fernald et al. U.S. Patent 6,229,827.

Regarding claims 13, 14, 16-19, 37, 46, 49, 50, 51, 53, 54, 56 and 65, Li in view of Feced et al teaches the invention as set forth above and regarding claim 49, Li teaches that both of the first and second optical waveguides is tunable to change each of the respective first and second reflection wavelengths as described in column 3, lines 19-24.

Regarding claim 50, Li teaches that the first and second reflection wavelengths are substantially aligned as described in column 4, lines 1-18.

Regarding claim 51, Li teaches that one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape as shown in Figures 2a-2c.

Regarding claim 53, Li teaches that the first reflection wavelength is offset a predetermined spacing from the second reflection wavelength as shown in Figures 2a and 2b.

Regarding claim 54, Li teaches that at least one of the first and second reflective elements includes a Bragg grating as described in column 3, lines 14-18.

However, regarding claim 13, Li does not teach that at least one of the first and second optical elements comprises an optical fiber, having a reflective element written therein; and a tube, having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber or regarding claims 14, 46 and 65, that at least one of the first and second optical elements or waveguides has an outer transverse dimension of at least 0.3 mm or regarding claim 16, a compressing device that axially compresses at least one of the first and second optical elements wherein at least one of the first and second reflective elements is disposed along an axial direction of each respective first and second optical elements or in regard to claim 17, that first and second compressing devices for compressing axially the first and second optical elements or in regard to claim 18 that a straining device for tensioning axially the first optical element to tune the first reflective

element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed or regarding claim 19, a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band. Nor regarding claim 37 does Li teach wherein the at least one of the first and second optical waveguides has outer dimensions along perpendicular axial and transverse directions, a first portion of the at least one of the first and second optical waveguides having an outer dimension being at least 0.3 mm along said transverse direction, at least a portion of the first portion having a transverse cross-section which is continuous and comprises a substantially homogeneous material; and the at least one of the first and second optical waveguides being axially strain compressed so as to change the at least one of the first and second reflection wavelengths. Regarding claim 56, Li does not teach that the optical filter further includes a compression device that axially compresses at least one of the first and second optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second tunable elements.

Regarding claim 13, Fernald et al. teaches that (see Figure 1) at least one of the first and second optical elements comprises: an optical fiber (10), having a reflective element (12) written therein; and a tube (20), having the optical fiber and the reflective element encased therein along a longitudinal axis of the tube, the tube being fused to at least a portion of the fiber as described in column 4, lines 23-25.

Regarding claims 14, 46 and 65, Fernald et al. also teaches that at least one of the first and second optical elements or waveguides has an outer transverse dimension of at least 0.3 mm as described in column 1, lines 60-61.

Regarding claims 16 and 56, Fernald et al. also discloses a compressing device for compressing simultaneously and axially the first and second tunable optical elements or the tunable optical waveguide, wherein each of the first and second reflective elements are disposed along an axial direction of each respective first and second tunable element as described in column 1, lines 57-67 and column 2, lines 1-3 and lines 42-44.

Regarding claim 17, Fernald et al teaches first and second compressing devices for compressing axially the first and second optical elements respectively as described in column 1, lines 57-67 and column 2, lines 1-4.

Regarding claim 18, Fernald et al. teaches a straining device for tensioning axially the first optical element to tune the first reflective element, wherein the first reflective element is disposed along an axial direction of the first optical element as disclosed in column 2, lines 1-3.

Regarding claim 19, Fernald et al teaches a heating element for varying the temperature of the first optical element to tune the first reflective element to reflect the selected first wavelength band as described in column 1, lines 41-49.

In regard to claim 37, Fernald et al. teaches that the at least one of the first and second optical waveguides has outer dimensions along perpendicular axial and transverse directions, a first portion of the at least one of the first and second optical

waveguides having an outer dimension being at least 0.3 mm along said transverse direction as described in column 1, lines 60-61, at least a portion of the first portion having a transverse cross-section which is continuous and comprises a substantially homogeneous material as described in column 1, lines 65-67; and the at least one of the first and second optical waveguides being axially strain compressed so as to change the at least one of the first and second reflection wavelengths as described in column 2, lines 1-3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the compression tuned grating as taught by Fernald et al. in the optical system of Li in view of Feced et al in order to provide for precise tuning of the filter.

6. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 and further in view of Putnam et al. U.S. Patent 6,310,990.

Regarding claims 20 and 21, Li in view of Feced et al teaches the invention as set forth above but does not further teach a first compressing device for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element; and a displacement sensor, responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element or wherein the displacement sensor includes a capacitance sensor coupled to the first

tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element.

Regarding claims 20 and 21, Putnam et al. does teach (see Figure 2) a first compressing device (50) for axially compressing at least the first tunable optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first tunable element as shown in Figure 1; and a displacement sensor (24), responsive to the compression of the first tunable optical element, for providing the displacement signal indicative of the change in the displacement of the first tunable optical element as described in column 5, lines 51-67 and column 6, lines 1-6 or wherein the displacement sensor includes a capacitance sensor (72, 74) coupled to the first tunable optical element for measuring the change in the capacitance that depends on the change in the displacement of the first tunable optical element as described in column 6, lines 1-6.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the optical structure as taught by Putnam et al. in the optical filter system of Li in view of Feced et al in order to provide feedback control for the tuning of the optical filter.

7. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li U.S. Patent 5,841,918 in view of Feced et al US Patent 6,445,852 in view of Fernald et al U.S. Patent 6,229,827 further in view of Kewitsch et al. U.S. Patent 6,236,782.

Regarding claim 52, Li in view of Feced et al and further in view of Fernald et al teaches the invention as set forth above but does not teach that one of the first and

second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized.

Regarding claims 40 and 52, Kewitsch et al. teaches that one of the first and second reflective elements is fully apodized and the other of the first and second reflective elements is partially apodized as described in column 10, lines 39-67 and column 11, lines 1-10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to apodize the reflective elements of Li in view of Feced et al and further in view of Fernald et al as taught by Kewitsch et al. in order to reduce grating sidelobes and eliminate adjacent channel crosstalk.

(10) Response to Argument

The applicant states on page 7 of the Appeal Brief that in regard to claim 1, obviousness rejection of *Li* and *Feced et al* does not teach or suggest an optical filter featuring first and second optical elements having respective first and second reflective filter functions, wherein at least one of the first and second filter functions is not substantially flat over a substantial portion of the respective first or second filter functions. Further, on page 8, the Appellant points out that an important advantage of the claimed filter is that it results in an optical output signal having a desired effective filter function that is very difficult or substantially impossible to produce by a single grating.

The Appellant then argues on page 9 of the Appeal Brief that the prior art, *Li* discloses (as shown in Figures 2a-2c) an optical filter that merely has two substantially

flat filter functions for providing an output signal having a corresponding substantially flat filter function. The Appellant contends that in operation *Li*'s filter can only tune or condition the optical input signal in relation to its bandwidth and/or wavelength using such substantially flat filter functions. Moreover, on page 10 of the Appeal Brief, the Appellant asserts that *Li* does not hint or suggest to use at least one of the first and second reflective filter functions that is not substantially flat over a substantial portion of the first or second reflective filter functions as recited in claim 1 and nothing in *Li* suggest a reason to look beyond the teaching of *Li* itself as a whole to produce an output optical signal that is not substantially flat over a substantial portion thereof. The Appellant states that there is clearly no reason or motivation to use anything other than a flat filter function in the optical systems disclosed by *Li*.

In response to this argument, the Examiner would first like to point out Examiner would first like to point out that Figures 2a-2c of Li show an idealized filter response (i.e., flat). It is well known in the art that a conventional filter response tends to have a "ramped" or "Gaussian" shape which approximates a "flat" response. Further, a close examination of Figure 2a shows that the left and right sides of the filter response are not "flat" but are in fact "ramped" so one interpretation could be that in fact one of the filter responses of Li is not substantially flat over a substantial portion of the respective filter function, especially since the Appellant has not defined the term "substantial portion" in any terms of degree in the specification or the drawings. The Examiner would also like to point out that *Li* in column 1, lines 20-29, refers to modifying the optical response of

Bragg filter gratings which can include a shift of the characteristic reflective spectrum or band, or an expansion or contraction of the spectrum.

The Appellant further argues that on the bottom half of page 10 of the Appeal Brief, that there is nothing in the secondary reference, *Feced et al* that suggest a reason to modify the teaching of *Li* as a whole to produce an output optical signal that is not substantially flat over a substantial portion thereof. Moreover, the Appellant takes issue with the motivation offered for combining *Li* with *Feced et al*, namely, " to provide for filter characteristics that are well-matched to ideal filter responses for a wide variety of applications".

In response to this argument, the examiner would like to point out that motivation to combine references does not have to be expressly taught by the references but can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones,* 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) In this case, it is well known in the optical filter art to tailor or produce filter characteristics (i.e., monotonic, non-monotonic, Gaussian, ramp, etc.) depending on response required for a particular application. The Examiner would like to point out that *Feced et al* teaches in column 11, lines 63-67 that the filter response can be non-continuous and non-monotonic and further in column 12, lines 13-18 reproduced below:

> The variety of designs that can be generated by the present invention demonstrates that the technique is well-suited to designing practical grating structures that have filter characteristics that well-matched to ideal filter responses for a wide variety of applications.

In the final office rejection, dated 17 March 2005, the examiner gave several examples of applications where the filter response may need to be non-continuous and non-monotonic that included sensors, phase shifted grating filters, Fabry-Perot etalon filters, comb filters and wavelength division multiplexers such as that in *Li*. However, the Appellant has failed to address these specific examples offered to show the need or desire " to provide for filter characteristics that are well-matched to ideal filter responses for a wide variety of applications" which was provided as motivation for combining *Li* in view of *Feced et al.*

The Appellant on the bottom of page 11 of the Appeal Brief and continuing on pages 12 and 13 contends that remarks made in the final rejection, dated 17 March 2005 which were directed to certain advantages namely, that the claimed optical filter has a desired effective filter function that is very difficult or substantially impossible to produce by a single grating were proper and that the applicants have the right to point out and argue advantages of the claimed invention to support the position that the claimed invention is different and patentable over the same.

In regard to this argument, the Examiner does not take issue with the applicant citing advantages of the claimed invention over the prior art. However, it should be noted that at one point in the prosecution, (see amendment 06 October 2003) this particular advantage was recited in the claim limitations (see for example, claims 1, 32, 37, 58). This limitation was later removed due to a 112 first paragraph rejection in

regard to this limitation being treated as new matter. It should also be noted that none of the advantages cited were ever presented in the original specification.

The appellant further argues on pages 13 and 14 of the Appeal Brief, that one of ordinary skill in the art would not be motivated to combine the cited prior art by reasons from knowledge that is known to one of ordinary skill in the art established scientific principles based on the evidence on the record for the following reasons:

> *Li's* thrust is to provide a device for modifying the wavelength, bandwidth or both of an optical signal. The device takes the form of multiple optical elements, each having substantially flat filter functions. There is no hint or suggestion in *Li* to use an optical element that is not substantially flat in place of *Li's* optical elements. Thus one would not be motivated to look to *Feced et al* to make a substitution or modification to *Li* to have one of the filter responses be other than substantially flat. Further, the Appellant asserts that there is nothing that suggests how or why such motivation is or "can be reasoned from knowledge that is known to one of ordinary skill in the art, established scientific principles or legal precedents established by prior case law" by one of ordinary skill in the art.

In response to this argument, Examiner would again like to point out that Figures 2a-2c of Li show an idealized filter response (i.e., flat). It is well known in the art that a conventional filter response tends to have a "ramped" or "Gaussian" shape which approximates a "flat" response. Further, a close examination of Figure 2a shows that the left and right sides of the filter response are not "flat" but are in fact "ramped" so one interpretation could be that in fact one of the filter responses of *Li* is not substantially flat

over a substantial portion of the respective filter function, especially since the Appellant has not defined the term "substantial portion" in any terms of degree in the specification or the drawings. Further, the Examiner would again like to point out that several examples were offered where the filter response may need to be non-continuous and non-monotonic (i.e., non-flat) that included sensors, phase shifted grating filters, Fabry-Perot etalon filters, comb filters and wavelength division multiplexers such as that in *Li*. However, the Appellant has failed to address these specific examples which was offered as motivation for combining *Li* in view of *Feced et al.*

The Appellant further argues on page 15 of the Appeal Brief that even if one were to look to *Feced et al* to make the modification in a multiple optical element device like *Li*'s one would find no motivation to make the modification, because the whole, thrust of *Feced et al* is directed towards the design and implementation of an optical device or system having a single optical element with a single optical filter function.

In response to this argument, it appears that the Appellant is attacking the references individually and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, *Li*, the primary reference, provides a teaching of first and second optical elements each having reflective filter functions. The secondary reference, *Feced et al* teaches that an optical filter or fiber Bragg grating can have a non-monotonic response. There is nothing in *Feced et al* to suggest that only

one fiber grating can be used in applications or systems where a certain filter response is to be tailored or modified for a specific application.

The appellant then argues on page 16 of the Appeal Brief, then argues that dependent claims 2-6, 8-9, 11-12, 15, 32-34 and 36 are patentable for the reasons cited above.

In response to this argument, the Examiner refers the Appellant to the responses to these arguments above.

On the bottom of page 16 and continuing on page 17 of the Appeal Brief, the Appellant in regard to claim 58, recites an optical filter having a first reflective element for reflecting a first wavelength band of light centered at a first reflection wavelength and a second reflective element for reflecting a second wavelength band of the light centered at a second reflection wavelength, whereby the first reflection wavelength and the second reflection wavelength are substantially the same. The Appellant argues that *Li* clearly does not use first and second reflection wavelengths that are substantially the same while nothing in *Feced et al* hints or suggest that two reflection wavelengths are substantially the same. Moreover, if *Li*'s first and second reflection wavelengths were substantially the same then there would be no tuning of the bandwidth which is the whole purpose of the design of *Li*'s optical system.

In response to this argument, the examiner would like to point out that the appellant fails to define the term "substantially" in the specification. The applicant cites Figures 3A, 3B and 6 of the disclosure as showing support for this limitation. However, a description accompanying these figures indicates that the resulting reflective filter

function can be substantially aligned or the same as the reflection wavelength but there is no quantitative measure associated with the term "substantially" (see page 9 of specification, lines 1-18). Given the broadest reasonable interpretation accompanying the term "substantially", *Li* is read as teaching that the first reflection wavelength (Figure 2a) and the second reflection wavelength (Figure 2b) are substantially the same as shown in Figure 2c.

The appellant then argues on page 18 of the Appeal brief, that in regard to the position that *Li* is read as teaching that the first reflection wavelength and the second reflection wavelength are substantially the same, if *Li*'s first and second reflection wavelengths were substantially the same, then there would be no tuning of the bandwidth which is the sole purpose of the design of *Li*'s optical system. Therefore, the Appellant maintains that *Li* effectively teaches away from the optical filter recited in claim 58.

In response to this argument, the Examiner would again like to point out that the appellant fails to define the term "substantially" in the specification. The applicant cites Figures 3A, 3B and 6 as showing support for this limitation. However, a description accompanying these figures indicates that the resulting reflective filter function can be substantially aligned or the same as the reflection wavelength but there is no quantitative measure associated with the term "substantially" (see page 9 of specification, lines 1-18). Given the broadest reasonable interpretation accompanying the term "substantially", Li is read as teaching that the first reflection wavelength (Figure

2a) and the second reflection wavelength (Figure 2b) are substantially the same as shown in Figure 2c.

In pages 18-22 of the Appeal Brief, the Appellant in regard to claims 59-62, 64, 66-68, 71-72, 7, 10, 35, 63, 13, 14, 16-19, 37, 46, 49-51, 53-54, 56, 65, 20-21 and 52 states that the prior art for these claims does not make up for the fundamental deficiency in *Li* or *Feced et al* in relation to that discussed above.

In response to these arguments, the Examiner refers the Appellant to the response to the arguments cited above.

(11) Evidence/Related Proceeding Appendix

Examiner notes that there was no evidence appendix or related proceeding appendix. According to the MPEP 1205.03(A), if the evidence appendix and related proceedings appendix are missing, but the record is clear that there is no evidence submitted and no related proceedings listed in the related appeals and interferences section, the examiner may accept the brief and state in the examiner 's answer that it is assumed that the appellant meant to include both appendixes with a statement of "NONE."

As such, it is assumed by the examiner that is was appellant's intent to include both appendixes with a statement of "NONE."

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Alessandro Amari Alessandro Amari

03 April 2006

Conferees:

Alessandro Amari Alessandro Amari

Drew Dunn

Ricky Mack